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AEMO 2019 Planning and Forecasting Consultation

AusNet Services welcomes the opportunity to make a submission to AEMO's 2019 Planning and Forecasting Consultation Paper.

Broad stakeholder engagement on the inputs, assumptions and modelling approach that will underpin the next Integrated System Plan (ISP) is critical to developing a plan that can be supported by stakeholders and delivered by Network Service Providers (NSPs). AusNet Services considers the timeline and approach to engagement detailed in the Consultation Paper is timely and appropriate.

The following points highlight key issues AusNet Services' has identified regarding the information presented in the Consultation Paper. As an appendix to this letter, please also find attached a table containing more detailed comments on the specific consultation questions.

Early exit of coal fired generation:

The timing of retirement of coal fired generation across the NEM is a critical factor in determining the need and timing of major transmission and generation developments. There is a high level of uncertainty in the timing of coal retirements and the impact on reliability and security of supply are significant. In this context we suggest:

- Early exit of coal generation should be modelled as a scenario rather than a sensitivity
- The base assumptions included for coal retirements in the neutral scenario should be reviewed in light of new information released by the owners of various coal plant and realistic technical and economic factors that will influence retirement dates for coal generators. AusNet Services supports the assessment of revenue sufficiency for existing thermal power stations as detailed in the Consultation Paper.

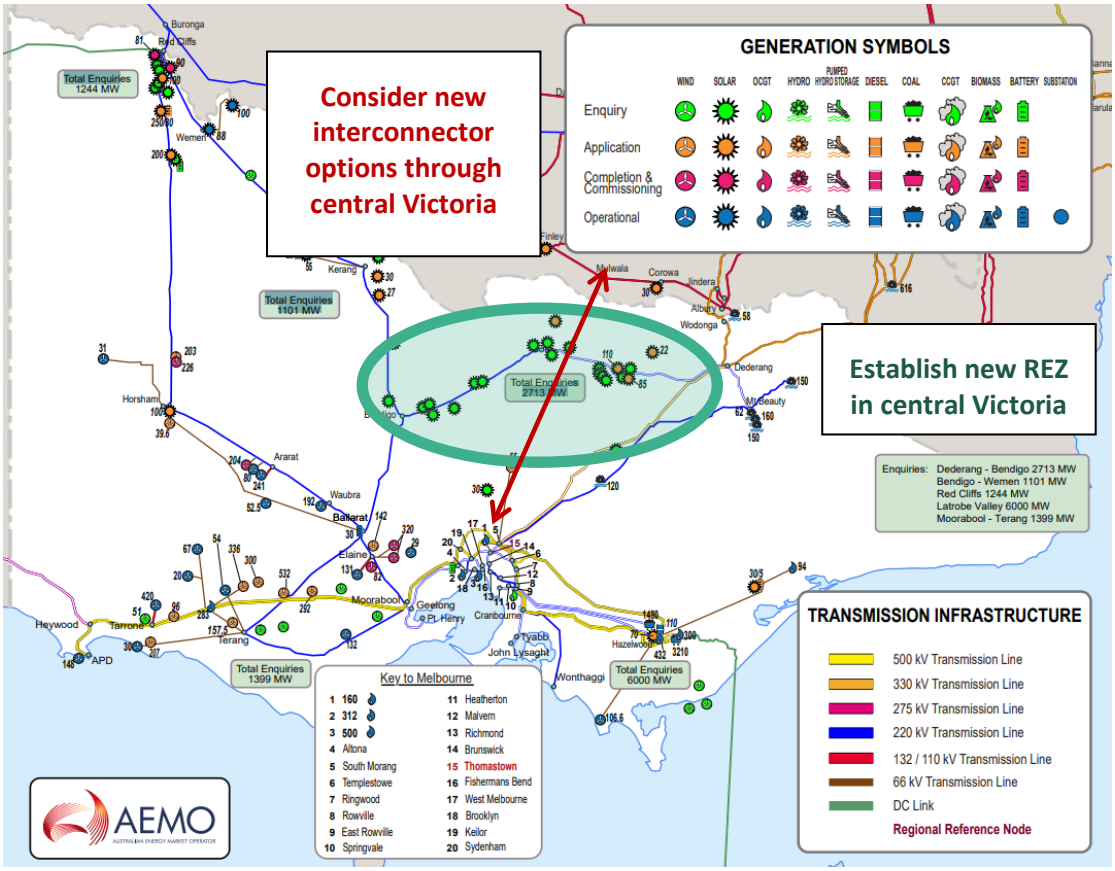
Social discount rate:

The Consultation Paper suggests the use of a Social Discount rate to determine discounted cash flows over the long term planning horizon. The Social Discount rate proposed (4%) is considerably lower than the Weighted Average Cost of Capital (WACC). AusNet Services is concerned that use of discounted rates in determining the transmission development plan may result in a disconnect between the ISP projects, and investments that can be justified under the Regulatory Investment Test (RIT). Further information from AEMO and discussion on the use of discounted rates should be included in the post consultation Stakeholder Workshop in April.

Renewable Energy Zones (REZs) and Interconnector options:

Accurate identification of REZs is important to ensure low emissions generators can join the power system at the lowest cost. Many areas of Victoria satisfy the criteria for efficiently located REZ including high wind and solar resource and proximity to network and load. We suggest adjustments to the Victorian REZ and representation of locations factors provided in the Consultation Paper as follows:

- The addition of a new REZ in Central Northern Victoria around the Glenrowan and Shepparton terminal stations (indicated by green oval). This area satisfies many of the REZ locational factors and has a high level of interest from renewables developers (2713 MW of current enquiries and applications according to AEMO latest information). This would also suggest alternative interconnector options from VIC to NSW through central Victoria and the new REZ.



- Locational cost factors shown in Figure 4 of the Consultation Paper should be more clearly represented to show the relativities between locational costs in different jurisdictions. The use of the High, Medium and Low colour coding in each State is misleading and does not show that the "High" cost locations in Victoria are in fact equivalent in cost (or lower) than the "Low" cost locations in other States. Further explanation on how locational cost factors and the "Groupings" (High, Medium and Low) are intended to be applied in the modelling would be beneficial.

Resilience

AusNet Services supports the need for further work on modelling and valuing resilience, in recognition of the broad range of risks and uncertainties that exist in current environment.

Renewable Energy Targets and Policies

The current Victorian Renewable Energy Targets and associated energy policy settings are not fully reflected in the assumptions workbook and should be reviewed to capture recent policy announcements including Solar Homes and the longer term legislated targets (further detail provided in attachment).

Distributed Energy Resources (DER)

The inputs and assumptions for DER are comprehensive; however, the treatment of the "local network" to which they are connected is unclear. Consideration of locational factors of DER could inform a more

accurate prediction of operational characteristics where there may be a conflict between market services (particularly for VPP modelling) and network services at the distribution level.

Operational Constraints

AusNet Services suggest that AEMO include outage constraint equations in market simulations due to their increasing prevalence and impact. NSPs are required to take outages to maintain, refurbish, and replace assets on the network as well as for connection of new customers. If outage constraints are not considered in planning analysis, augmentation may be deferred to a point where it is no longer achievable or the existing assets can no longer be maintained. Operational constraints should be considered in determining the timing of transmission developments.

In addition, AusNet Services is experiencing increasing difficulty in limiting the number and level of constraints placed on generators when planning and co-ordinating outages of network elements for necessary maintenance and project works. This is causing significant lost revenue for generators and increased market impact due to constrained generation.

AusNet Services looks forward to participating in the subsequent stakeholder engagement workshops and other activities and can provide further information on the points in this submission if required. Please contact Jacqui Bridge, Manager Transmission Network Development, if we can assist with queries in relation to this submission.

Yours sincerely,

Jacqueline Bridge

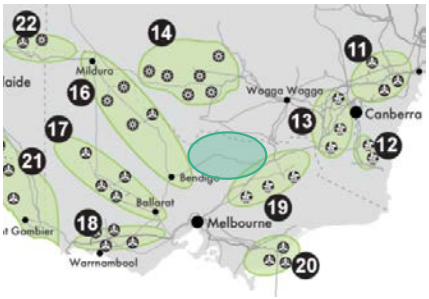
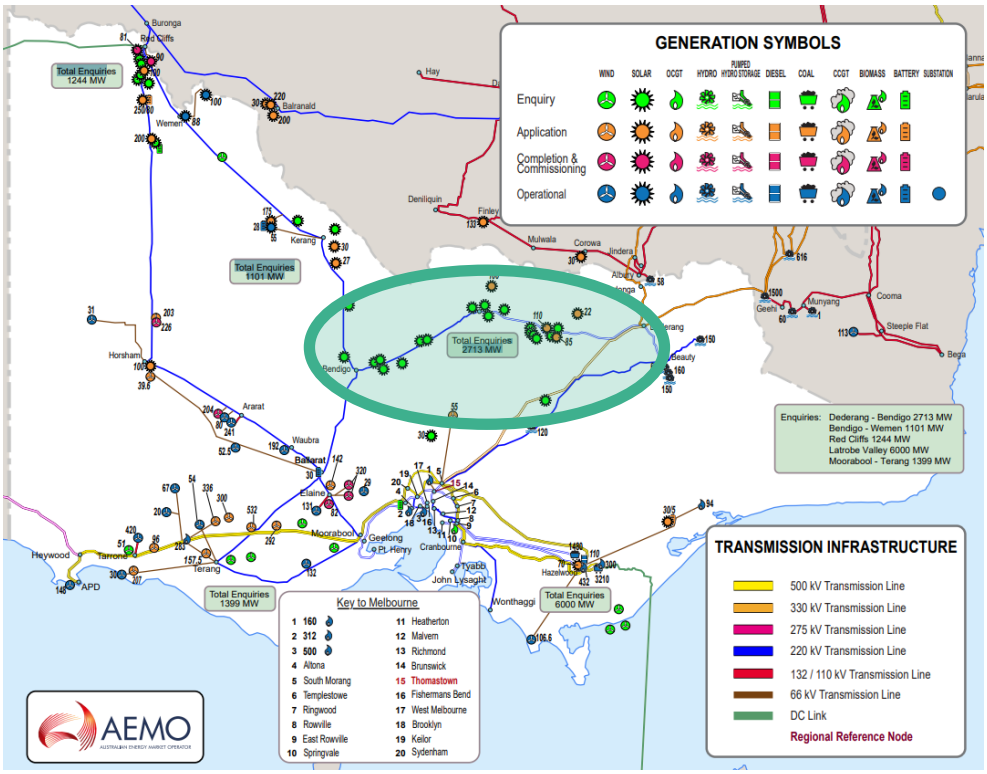
Manager, Transmission Network Development

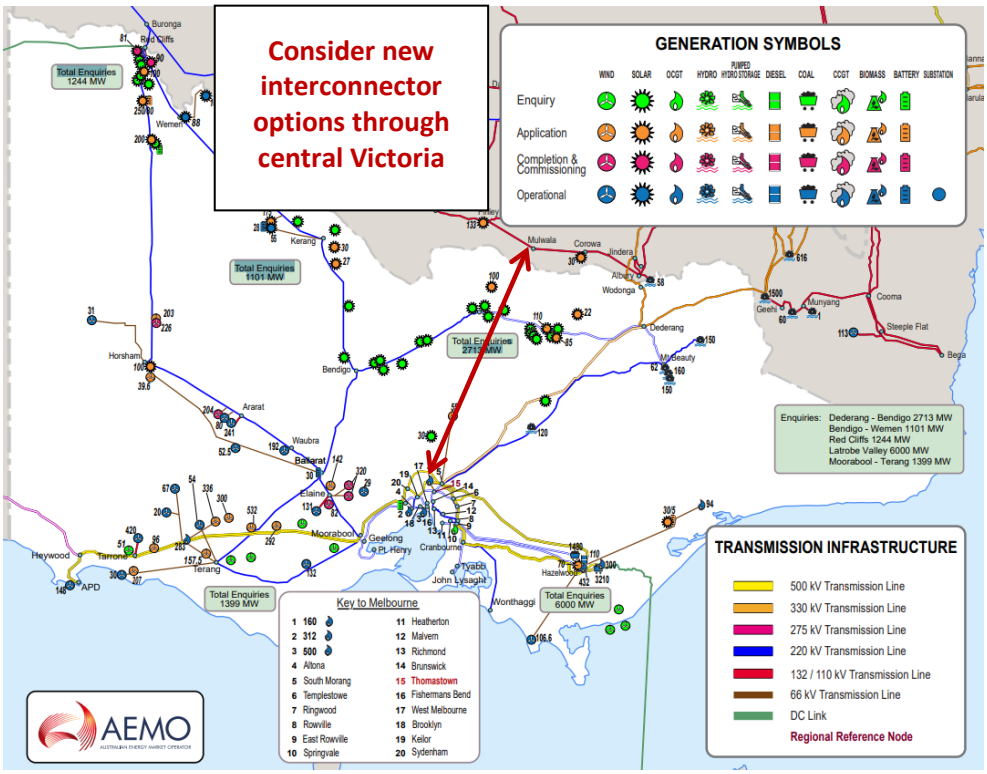
AusNet Services

Appendix – AusNet Services Responses to 2019 Planning and Consultation Paper

Consultation Paper section	AusNet Services Comments
2. STAKEHOLDER ENGAGEMENT	
QUESTION 1 How could AEMO further improve stakeholder engagement and confidence in the results of the 2019-20 ISP and 2019 ESOO?	
AusNet Services appreciates the effort that AEMO has made to improve engagement with consumers and stakeholders in the development of the next ISP and believes the timeline and approach proposed in the Consultation Paper is appropriate. AusNet Services is taking the opportunity to participate in various activities and working groups to increase the level of input and engagement from our organisation. We note that the volume of materials provided in this Consultation Paper is considerable and few organisations (if any) would have the resources and capability to fully review and understand this suite information in order to provide the detailed feedback on all aspects, or to understand the potential influence each of these inputs may have on the outcomes of the ISP. AEMO should be aware of this asymmetry and take this into account in running the consultation process, we do not have a suggestion on how to improve this situation.	
3. SCENARIOS	
QUESTION 2 Do you agree that the proposed scenarios outlined in this section provide plausible and internally consistent future words for use in planning and forecasting publications? Do they provide sufficient stretch for forecasting and planning purposes? How could they be improved?	
AEMO's Neutral, Slow Change, Fast Change and High DER scenarios offer common sense and plausible views of potential futures. AEMO's input and assumptions worksheets could be improved by providing more context around some of the DER inputs. For example: • Solar penetration forecasts (per cent of dwellings with rooftop PV) • Number/average size of batteries • Per cent of total vehicle fleet / per cent of new vehicle sales which are electric. Such context would allow stakeholders to form a stronger view of how the forecasts may align with their own forecasts, or other forecasts in the public domain. AusNet Services notes the inverse relationship between DER and large scale renewables in the non-neutral scenarios and whilst we believe this is an internally-consistent view of these scenarios, it will be important for AEMO to recognise that in Victoria, the Solar Homes package and VRET scheme are likely to result in high uptake of rooftop PV as well as high investment in large scale renewable generation. AEMO has stated that it intends to include the timing of coal-fired generation retirements as a sensitivity. AusNet Services suggest that since early exit of coal generators has such a significant impact on the timing of transmission and generation development, that a scenario with early coal retirement should be considered in preference to a sensitivity analysis. The selected option (scenario or sensitivity) should reflect differing possibilities of technical remaining lives as well as economic or political factors.	

Consultation Paper section	AusNet Services Comments
QUESTION 3 What additional sensitivities should be explored in the 2019-20 ISP or 2019 ESOO, that could materially impact power system planning?	
AusNet Services notes AEMO's intention to use a social discount rate (lower than the WACC for investment purposes) for the NPV assessment of transmission investments. AusNet Services supports the comments made by the ENA in its submission in relation to this matter. AusNet Services suggests that the impact of a lower social discount rate could be explored via sensitivity analysis, rather than as a feature of the four central scenarios. Consideration of operational constraints within the modelling is important. Recent developments in Victoria have demonstrated that portions of the network have reached a point where planned or unplanned outages cannot be supported without constraints on generation and customer load at risk. This situation is not sustainable and should be accounted for in the modelling undertaken for the next ISP.	
4. INPUTS AND ASSUMPTIONS	
4.1.1 Customer DER	Overall the Inputs and Assumptions for DER look to be quite comprehensive, however the treatment/consideration of these in relation to the "local network" to which they are connected is unclear. Assumed aggregated forecasts of DER operation may be affected by local network constraints, and so it may be advantageous to include mechanisms to modify expected DER operation in alignment with the level of local network DER penetration; It would be useful for DER forecasting to be more granular in a geospatial context (e.g. clustering of EV penetration/charging within a local network can quickly lead to asset overload issues) There does not appear to be any direct mention of the use of DER for future "distribution market" services in this section (e.g. reactive power support to relieve local network voltage constraints). Whilst this is largely a future characteristic, it may influence the first point listed above.
4.1.3 Virtual Power Plants	The Consultation Paper focus in section 4.1.3 is on VPP action to address system peaks rather than household drivers. As such, the consideration is primarily on using the VPP as aggregated ESS, and on discharging energy to meet system needs. There also needs to be consideration in the modelling for the impact of pseudo "synchronous" charging behaviour on the respective local networks to which it is connected, as this is already a known condition that results in abnormal use of the network and consequent asset risks.
4.3 Key technical and economic settings affecting energy supply	Locational cost factors shown in Figure 4 of the Consultation Paper should be more clearly represented to show the relativities between locational costs in different jurisdictions. The use of the High, Medium and Low colour coding in each State is misleading and does not show that the "High" cost locations in Victoria are in fact equivalent in cost (or lower) than the "Low" cost locations in other States. Further explanation on how locational cost factors and the "Groupings" (High, Medium and Low) are intended to be applied in the determination of REZ and in the ISP modelling should be provided.

Consultation Paper section	AusNet Services Comments
4.5 Renewable Energy Zones	  AusNet Services suggests an additional REZ in Victoria is warranted in central/north Victoria region around the Shepparton and Glenrowan Terminal Stations. This area has a large volume of interest from renewable developers and meets the following REZ criteria: good solar resource; and access to electrical network. This area benefits from reasonable existing network capacity, close ties to the existing VIC-NSW interconnector and potential to connect to a future 2nd VIC-NSW interconnector to increase capacity. The consideration of losses and other factors in prioritising REZ must be done carefully and consistently. Further clarity on how REZ have been prioritised and how these priorities are used to determine urgency of network development is required.
4.6 Interconnector augmentation options	In conjunction with the identification of a new REZ in north central Victoria, AusNet Services suggests the next ISP should consider other credible options for interconnection from Victoria to New South Wales. SnowyLink South was included in the 2018 ISP, however other credible options may provide greater benefits and should be considered in more detail now that both the EnergyConnect and Snowy 2.0 projects have a greater degree of

Consultation Paper section	AusNet Services Comments
	certainty. We suggest routes through central Victoria that are diverse from the existing VNI but provide a shorter electrical route from Melbourne to the Snowy 2.0 generation/storage and EnergyConnect. 
4.8 System security constraints	AusNet Services suggests that AEMO include outage constraint equations in market simulations due to their increasing prevalence and impact. NSPs are required to take outages to maintain, refurbish, and replace assets on the network as well as for connection of new customers. If outage constraints are not considered in planning analysis, augmentation may be deferred to a point where it is no longer achievable or the existing assets can no longer be maintained. Operational constraints should be considered in determining the timing of transmission developments. In addition, AusNet Services is experiencing increasing difficulty in limiting the number and level of constraints placed on generators when planning and co-ordinating outages of network elements for necessary maintenance and project works. This is causing significant lost revenue for generators and increased market impact due to constrained generation. AusNet Services is concerned about the suggestion to reclassify a portion of the Buronga Terminal Station as a Victorian connection to resolve loop flow issues created by the development of EnergyConnect (SA-NSW). Further information is required on other possible solutions and also the potential implications for transmission charging.
QUESTION 4 Do the proposed inputs and assumption provide a reasonable basis for assessing the value and direction of the future energy market transition? If not, please provide suggestions for improvement, particularly with regard to consumer embedded investments, large-scale generation technologies, and	

Consultation Paper section	AusNet Services Comments
network and non-network options to support Australia's future energy system.	
AusNet Services notes there are differences in AEMO's stated approach to modelling the Victorian Renewable Energy Target (VRET). The assumptions include the 25% target by 2020 and 50% by 2030, however has not referenced the 40% target by 2025, if not already, this mid point should be factored into the modelling assumptions. Future additional VRET targets are likely to be added over the planning period as these mechanisms are implementing Victoria's Climate Change Act 2017 which establishes a long term target of net zero emissions by 2050. This act requires five yearly interim emissions reduction targets and the existing VRET targets are the implementation mechanism. It would appear reasonable to forecast additional targets for each five-year period up to 2050 at which point the Act requires net zero emissions. Fast, Neutral and High DER Scenarios should factor in various VRET target trajectories to reach Net Zero emissions for Victoria generation by 2050, whilst the slow change scenario could consider a policy change that would change the parliamentary act.	
QUESTION 5 Do you have any other feedback on AEMO's proposed inputs and assumptions?	
In the table above, AusNet Services has provided suggestions with regard to the inputs and assumptions including: • Customer DER and how distribution network constraints may impact the ISP assumptions • Modelling of Virtual Power Plants • Locational factors used to identify and prioritise REZ • Suggested a new REZ in Victoria • Suggested alternative VIC-NSW interconnector options be included • Suggested operational constraints be factored into the modelling, and • Provided information on the Victorian energy policies and legislation. Consideration and inclusion of these suggestions in the future modelling and assumptions would improve the robustness and better reflect available information.	
QUESTION 6 Do you have specific feedback and data on:	
c/ Generator fixed O&M costs, noting the inclusion of fixed costs associated with mines??	Loy Yang A and B share coal mine supply and make up water infrastructure. Retirement of Loy Yang A generation would increase fixed O&M costs for these operations on the remaining Loy Yang B generation. These impacts should be considered in any review of revenue sufficiency for thermal generators.
e/ The approach on generator retirements, including appropriate costs to convert existing CCGTs to OCGTs providing peaking, rather	Other factors which could contribute to generator retirements and should be considered, include: – impact of recent safety issues / fatality and resulting operational restraints across Victoria – The age of individual generator units and where these were commissioned over a period of years, whether staging of unit retirements based on age of plant is likely, or could fixed O&M costs result in retirement of all units in line with the oldest?

Consultation Paper section	AusNet Services Comments
than major energy production role	– Unit commissioning dates for Victorian coal generation units

Generating Unit	Commissioning Date*	50 yrs of operation
Yallourn W Unit 1	1973	2023
Yallourn W Unit 2	1975	2025
Yallourn W Unit 3	1981	2031
Yallourn W Unit 4	1982	2032
Loy Yang A Unit 1	1984	2034
Loy Yang A Unit 2	1985	2035
Loy Yang A Unit 3	1987	2037
Loy Yang A Unit 4	1988	2038
Loy Yang B Unit 1	1993	2043
Loy Yang B Unit 2	1996	2046

*Sourced from publicly available information

5. MATERIAL ISSUES FOR 2019

QUESTION 7

For 2019 planning and forecasting activities, what, if any, material issues should be prioritised ahead of the issues proposed by AEMO?

No response

QUESTION 8

What other material HILP events should be considered in assessing resilience?

AusNet Services' view is that AEMO can use sensitivity analysis to explore high impact, low probability events. For example, AEMO could consider modelling the following sensitivities:

- New, unforeseen low-cost gas supplies (lower than those forecast by AEMO's consultant), due to, for example, lifting of moratoria on new gas exploration
- Prolonged loss of critical transmission network infrastructure
- Planned major augmentations such as Marinus Link or Snowy 2.0 not proceeding
- A large reduction in industrial/manufacturing demand.

QUESTION 9

What mitigation options could be considered to increase grid resilience, and how should these options be evaluated? Is AEMO's proposed approach reasonable?

Consultation Paper section	AusNet Services Comments
Diverse interconnection paths and earlier build of new transmission network including both interconnectors and intra-state development would mitigate risks and increase grid resilience.	
6. INERTIA AND SYSTEM STRENGTH REQUIREMENTS METHODOLOGIES	
QUESTION 10 What other factors should be considered in the methodologies or proposed 2019 improvements to determine future inertia or system strength requirements?	
Operability of the network.	